NOTES ON CULICIDAE IN VENEZUELA, WITH DESCRIPTIONS OF NEW SPECIES

PART III

BY

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Anopheles (*Arribalzagia*) *punctimacula*, D. and K.

Anopheles (*Arribalzagia*) *venezuelae*, Evans

Amongst the *Arribalzagia* material from the Panama Canal Zone, referred to in my previous paper (1922), were twenty-nine specimens with at least one of the hind tarsi complete. Most of these agreed with Howard, Dyer and Knab's (1917) description of *A. punctimacula*, D. and K., but two specimens had two hind tarsal bands as in *A. venezuelae*, and two others showed a tendency to the formation of the second band. Further, a very considerable amount of variation was found among the specimens, with regard to the spotting of the other segments of the tarsi, the left and right hind legs of the same insect in one case being markedly different in this respect. The tarsal characters used by me to distinguish *A. venezuelae* from *A. punctimacula* (1922, p. 217) are, therefore, valueless.

I have also been able to examine numerous other examples of *A. venezuelae*, kindly sent by Dr. Núñez Tovar from Venezuela, among them being seven specimens in which the last hind tarsal segment has only one dark band. It was also found that the most perfect specimens among these collections had a number, from two to fourteen, dark squames scattered throughout the long pale scaled area of the third vein, thus agreeing with the description of *A. punctimacula*, D. and K.

A re-examination of the type of *A. venezuelae* has revealed the fact that one of the wings has several dark scales in this position. I have, therefore, no hesitation in regarding *A. venezuelae*, Evans, as synonymous with *A. punctimacula*, D. and K.

Culex maracayensis, n. sp. (fig. 1)

MALE.

Proboscis with a narrow whitish band on outer third. *Palpi* with scales mostly dark brown, pale scales creamy, forming a narrow band on basal half and a wide band on proximal half of long segment, bases and apices of all the segments pale scaled. *Occiput* with silvery narrow curved scales in front, brassy ones behind, upright forked scales blackish. *Prothoracic lobes* with whitish narrow curved scales and pale brown bristles. Integument of mesonotum reddish brown. Dorsum with two broad bare stripes, narrowing distally. Vestiture of rather sparsely distributed golden brown and silvery scales, the latter occurring chiefly at anterior lateral margins, on anterior fourth of median area, around anti-scutellar space, and in two small oval areas on posterior half of disc. Bristles, numerous, brown.

Abdomen. Tergites dark brown scaled with narrow irregular basal bands of whitish scales. Sternites clothed with transparent whitish scales.

Wings with dark brown scales. Bases of fork cells about equidistant from base of wing. First fork cell about twice as long as its petiole.

Legs. Femora pale beneath, the pale area being very well defined on the femur. Apices of front and mid femora narrowly pale. Front tibia with conspicuous apical white patch above, about twice as long as the average width of the tibia in dorsal aspect. Mid tibia with very small pale apical spot, pale scaled beneath throughout, hind tibia with a well defined stripe of creamy scales extending along most of its length dorsally and a well defined apical white ring. Front and mid tarsi with first two segments narrowly pale apically, other segments of front tarsi without white, those of mid tarsi with one or two pale scales apically. Hind tarsus, with conspicuous pale rings apically and basally on all the segments.

Hypopygium (fig. 1). Side-pieces (A) with clasp narrowing gradually towards distal extremity, articulated spine narrow. Lobe of side-pieces (B) an undivided, distally directed arm, bearing three stout rods, of which two are sub-equal, and longer and stouter than

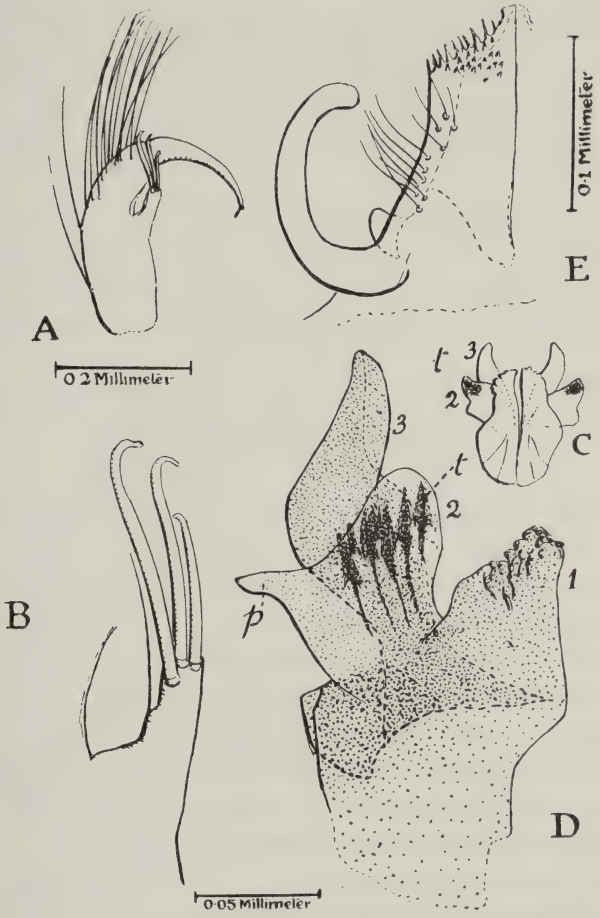

FIG. 1. *Culex maracayensis*, n.sp. Hypopygium. *A.*—Side piece. *B.*—Lobe of side piece. *C.*—Phallosome, ventral aspect, semi-diagramatic, to same scale as *A*; 1, 2, 3 lobes numbered as in *D.*; *t.*—position of teeth. *D.*—Half of phallosome under pressure, ventro-lateral aspect; *p.*—process of lobe 2; *t.*—teeth on upper side of lobe 2. *E.*—Tenth segment, dorsal aspect.

the third. *Phallosome* (C & D) with each half divided distally into three lobes; inner lobe (1) ventral, with chitin distally thrown into ridges, which give rise to a denticulate appearance, particularly at the margin. Second lobe when flattened out appearing as a thin

plate with an external pointed process (p.) and bearing on its dorsal surface a row of blackish chitinous teeth, five large and three or more small (some of these teeth are largely obscured by the others in the figure); four of the large teeth continued proximally as thin chitinous ribs. Third lobe (3) arising dorsally to second lobe, elongate, curved and much narrower than the first and second lobes. Tenth segment a membraneous lobe with curved basal arms, distal margin spinose, tergal surface with paired chitinous plates, a spinous area distally, and a group of four setae and a row of seven setae laterally.

Length, c. 4·0 mm. Wing, c. 3·0 mm.

Type: One ♂, Maracay, October, 1922; Dr. Núñez Tovar.

This species appears to be most closely related to *C. coronator*, which it resembles in colouration and in the character of the tenth sternites.

Culex paganus, n. sp.

MALE.

Palpi very short, as short as those of female. *Head:* Antennae plumose, hairs brown; *proboscis* dark brown scaled, expanded apically; *eyes* black, *occiput* black clothed with white, narrow curved scales, white flat ones at sides below, and pale yellowish brown upright forked scales. Clypeus yellowish brown, sub-globular.

Prothoracic lobes whitish scaled. Integument of mesonotum pale olivaceous, darker where sub-median bare stripes occur and in posterior lateral areas. Scales whitish and pale yellowish brown, the whitish ones predominating anteriorly and at sides. Bristles long, dark brown. Pleurae pale green.

Abdomen with grey integument. Scales of tergites dorsally very dark brown with sub-metallic bluish lustre, ventrally whitish with bluish lustre. Sternites whitish scaled.

Legs unbanded, vestiture dark sepia, femora pale beneath.

Wing. Scales of costa and sub-costa dark sepia, on other veins semi-transparent with obscure bluish tinge in certain lights. First fork cell almost three times as long as its petiole, second twice as long as its petiole.

Hypopygium. The main features are illustrated in figure 2. Tenth sternites slender, comb-shaped distally with about six teeth.

FEMALE.

Antennae pilose, hairs brown. Occiput with creamy narrow curved scales and pale straw-coloured upright forked ones. Mesonotum with integument uniformly brown, pale scales almost confined to edges of disc and lateral depressed areas.

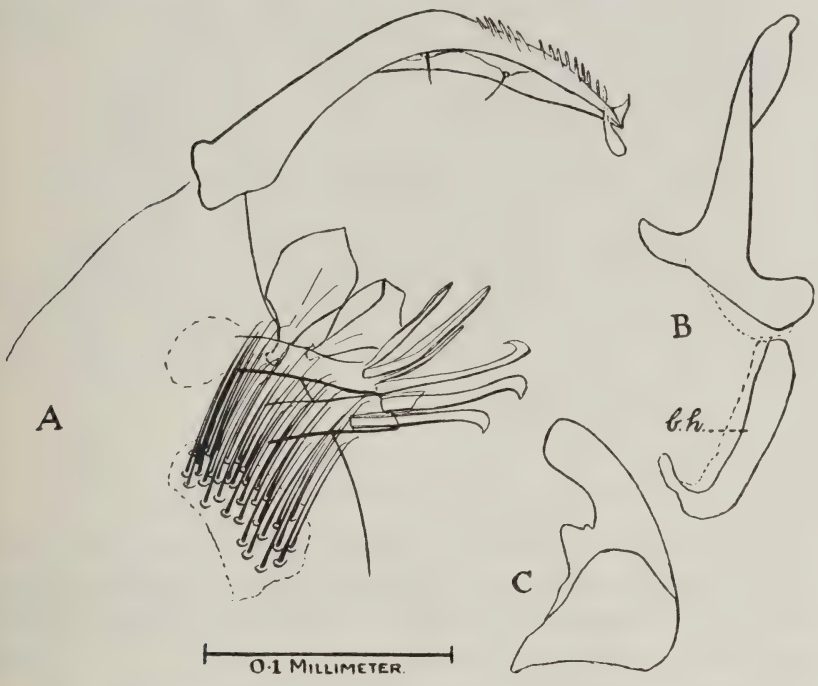

FIG. 2. *Culex paganus*, n.sp. Hypopygium. *A.*—Apical part of side piece, general setae of vestiture omitted. *B.*—Half of phallosome, lateral aspect; *b.b.*—basal hooks. *C.*—Transparent triangular plate.

Legs. Hind tibia and metatarsus with a few brassy scales beneath.

Type: ♂ and ♀ from villages, Estada Aragua, Venezuela, 23rd August, 1922; Dr. M. Núñez Tovar.

This species apparently approaches near to *Culex* (*Isotomyia*) *bifoliata*, Dyar, from the Panama Canal Zone, in the structure of the male hypopygium. The leaves on the stem of the upper division of the side-piece are, however, described as 'crooked curved leaves,' and although the leaves (*l.*) in *C. paganus* are apt to be folded in mounting, they could not appear crooked unless greatly distorted in this process. There are also a number of other differences in

points of detail, but in the absence of a figure of the structures in *C. bifoliata* it is difficult to estimate the value of these. In vestiture, however, *C. paganus* differs very greatly from the Panama Canal species, in which the upright forked scales of the head are white, the vestiture of the mesonotum consists of 'fine dark brown hairs, and the abdomen is entirely black.' There can be no doubt, therefore, that *C. paganus* is specifically distinct from *C.* (*Isotomyia*) *bifoliata*, Dyar.

Culex (*Neomelanoconion*) *chrysothorax*, Newst. and Thomas

I am now able to confirm the occurrence of this species in Venezuela, which has hitherto rested on the record of a single female collected by Professor Stephens at Mene Grande. Two males and two more females were taken at Maracay, 5th October, 1922, by Dr. M. Núñez Tovar.

Psorophora tovari, Evans (figs. 3 and 4)

A considerable amount of material of this species has been received since the publication of its description (1922), which enables me to give a comprehensive account of the thoracic and abdominal colouration, as well as a description of the male.

FEMALE.

Mesonotum. The distribution of scales of different shapes and colours is illustrated in figure 3. The narrow curved, spindle-shaped, and smaller broad curved scales (fig. 3, C, D & E), which are usually dull brown or yellowish brown, are in some specimens dull pale yellow and whitish. The very broad, much curved scales (B, B1) are usually pale creamy yellow, sometimes pale yellow.

Abdomen. The broad, pale yellow, apical, dorsal bands which are complete on segments two to six of the type, may be interrupted medially by dark scales on segments three to six, four to six, five to six, or six; or they may be separated from the posterior margins medially by a relatively small or large dark scaled triangular patch on these segments.

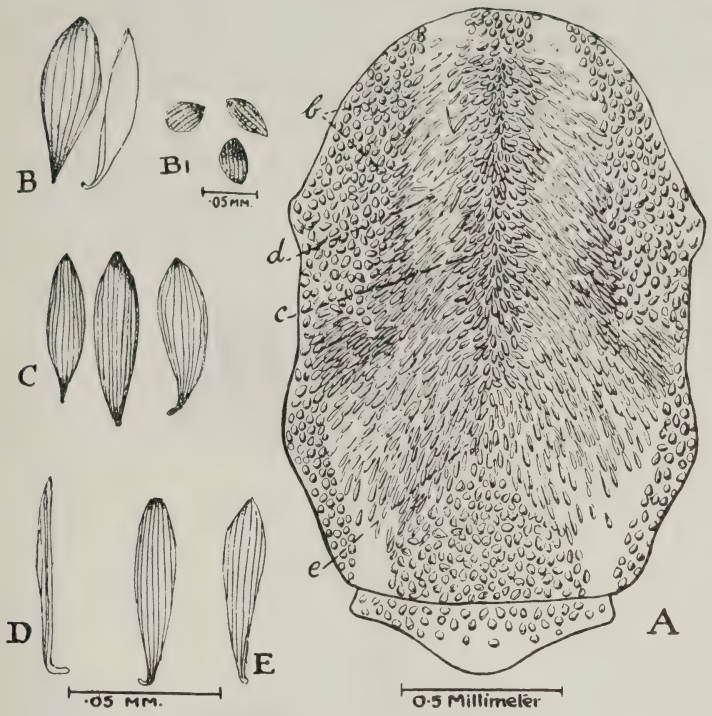

FIG. 3. *Psorophora tovari*, Evans. *A.*—Mesonotum of female. *B.*, *C.*, *D.*, and *E.*—Scales from regions *b.*, *c.*, *d.*, and *e.*, of mesonotum, mounted in balsaam; *B* 1.—scales from region *b.* as seen in *situ*.

MALE

Palpi entirely clothed with blackish scales with deep metallic blue reflections and black hairs, last two segments incrassate. Hairs of antennae brown, tori shining black. Occiput, mesonotum, legs and wings as in female.

Abdomen with apical bands usually complete on segment two, complete or divided on segment three, and generally interrupted medially either partially or completely on the other segments.

Hypopygium (fig. 4). Claspettes (harpagones) with nine (this number may be subject to slight variation) stout filaments (*f.*) arising from prominences along distal border, and a row of about sixteen to twenty very delicate setae with distal portions swollen and produced into fine filamentous processes as shown in the figure.

Type: ♂ and nine co-type ♂♂ from Maracay Region, Venezuela, 1922; Dr. M. Núñez Tovar. Co-type ♀ from Maracay,

10th October, 1922, and others from Maracay Region, July, 1922, ♀♀ 14; Maracay, 5th June, 1922, ♀♀ 30; San Meteo, 2nd June, 1922, ♀♀ 27; Guacara, 1922, ♀♀ 4; Lagua, 15th June, 1922, ♀♀ 2. Dr. M. Núñez Tovar.

Fig. 4. *Psorophora tovari*, Evans. Apical portion of claspette, ventral aspect; *f.*—stout filament; *h.*—expanded hair.

This species is evidently closely allied to *P. cyanescens*, Coq., and *P. purpurascens*, Eds., specimens occurring which resemble one or other of these species in abdominal markings. The three species appear to differ chiefly in mesonotal vestiture; *P. cyanescens* having 'broad soiled silvery scales intermixed with some narrower brown ones . . . . especially on centre of disc, *but not forming any defined pattern*' (H., D. and K., 1915), while *P. purpurascens*, Eds., has the mesonotum with 'flat silvery grey scales, darker, but not conspicuously so, in the centre of the mesonotum.'

Psorophora ciliata, Fab.

In a previous paper (1922) I recorded the occurrence of two specimens of this species near Maracay, and Dr. Núñez Tovar has subsequently sent further material from this region. In view of

Dyar's recent study of the species of the *ciliata* group of *Psorophora*, and their distribution, and also of the fact that they exhibit considerable differences in thoracic pattern from *P. ciliata*, a further discussion of the Venezuelan specimens is necessary.

Dyar recognises four species of the *ciliata* group of *Psorophora* in the Argentine region, and states that, apart from Theobald's record of it in British Honduras, true *ciliata* has not been recorded south of Tampico, Mexico. Further, he separated *P. tibialis*, a South American species, from *ciliata* by the slight differences of mesonotal pattern together with the markedly discontinuous distribution. Now, in none of the Venezuelan specimens does the mesonotal pattern conform exactly to that of *P. ciliata*, and in some cases (fig. 5, A and B) it differs quite as much as that of *P. tibialis*,

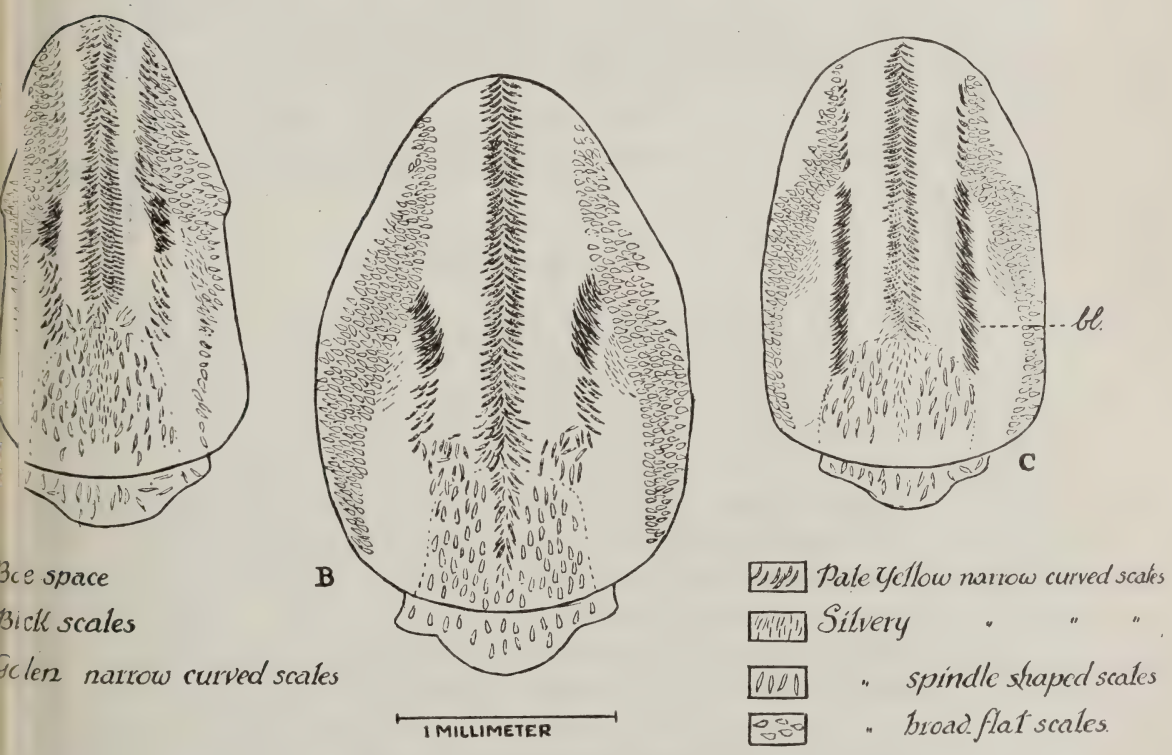

Fig. 5. *Psorophora ciliata* from Venezuela. Mesonotal patterns of three different specimens. *A.* and *B.*—Female; *C.*—Male.

resembling this latter species in the reduction of the long lines of black scales (fig. 5, C, *bl.*). All the five specimens differ from *P. ciliata* in having the median line of narrow curved scales not golden in the antescutellar space. In three of the specimens these scales are entirely silvery (fig. 5, A & C), while in the other two (fig. 5, B) they are mostly pale yellow. Owing to the amount of variation which exists among only five specimens from this region, and the proximity of Venezuela to Central America, I regard these specimens as specifically identical with *P. ciliata*.

Megarhinus trinidadensis, D. and K.

Males, larvae and pupae agreeing with the description of this species, and females differing in the absence or reduction of white on the third mid-tarsal segment, have been received from Dr. M. Núñez Tovar. This difference does not seem to justify the separation of these specimens from the Trinidad species.

Bred in laboratory, Maracay, 1st November, 1922, Dr. M. Núñez Tovar, ♂ 1, ♀ 1; Mariara, Est. Aragua, 11th September, 1922, ♂ 1; Maracay, 4th June, 1922, ♂ 1; Maracay region, ♂ 1, ♀♀ 20.

Goeldia longipes, Fab.

Five females taken at Tucupido, December, 1922; Furmero, 8th June, 1922, ♀♀ 2; and Maracay region, June and July, 1922, ♀♀ 2, by Dr. M. Núñez Tovar, are referred to this species, although they differ slightly from Howard, Dyar and Knab's (1915) account of it. The mesonotal scales have a distinct sub-metallic blue colour, when the thorax is viewed from behind, and the scales on the scutellum and ante-scutellar space are peacock-blue and greenish-blue. In these respects they resemble *L. culicivora*, D. and K., but they differ from this species, and resemble *G. longipes*, Fab., in the ciliation and colouration of the hind legs. The female palpi are said to be equal in length to six antennal segments in *G. longipes*, and to four in *G. culicivora*; in the Venezuelan specimens the female palpi equal nearly five antennal segments, that portion projecting beyond the clypeus being equal to four segments.

Wyeomyia (*Decamia*) *pseudopecten*, D. and K.

A male specimen taken at Maracay, 2nd September, 1922, by Dr. M. Núñez Tovar, was found to agree closely with this species in hypopygial characters, but the long paired hairs of the side-piece, though longer than the clasper were less than twice its length.

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